ROTATABLE IMAGING SYSTEM

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. patent application Ser. No. 14/559,827, filed on Dec. 3, 2014, which claims the benefit of U.S. Provisional Patent Application No. 61/911,402, filed on Dec. 3, 2013, and is a continuation-in-part of U.S. patent application Ser. No. 13/779,543, filed on Feb. 27, 2013, which claims the benefit of U.S. Provisional Patent Application No. 61/603,853, filed on Feb. 27, 2012, and U.S. Provisional Patent Application No. 61/667,108, filed on Jul. 2, 2012, the entireties of each and all of which are incorporated herein by reference.

FIELD OF THE INVENTION

The present invention relates to a 360° imaging system, and more particularly to a 360° imaging system that can be used to image a patient prior to plastic surgery and other cosmetic procedures.

BACKGROUND OF THE INVENTION

In the field of plastic surgery, it is often desirable to document a patient's appearance before and after surgery. Photography is the usual means of documentation. However, often a photograph from one angle or even several angles is not sufficient to show the true transformation. Accordingly, a need exists for a system that documents up to a full 360° view of a patient before and after surgery.

SUMMARY OF THE PREFERRED EMBODIMENTS

In accordance with a preferred embodiment of the present invention there is provided an imaging system that includes a rotating unit that includes an imaging camera, an alignment camera and at least a first monitor. The rotating unit is rotatable between a home position and a finish position about a rotation axis such that the imaging camera can capture a first scan. The alignment camera is directed generally downwardly and is configured to capture a first alignment image of a subject positioned generally co-axially with the rotation axis. The first alignment image is displayed on the first monitor. In a preferred embodiment, the first monitor includes alignment markings thereon that include at least one of a head alignment circle, centering lines or a shoulder alignment line. Preferably, the rotating unit includes a first horizontal boom having a first end, a second end, and a middle section. A first arm depends downwardly from the first end of the first horizontal boom and the imaging camera is positioned on the first vertical arm. The screen depends downwardly from the second end of the first horizontal boom. In a preferred embodiment, the imaging system includes second horizontal boom. The first horizontal boom is positioned below the second horizontal boom and is adapted to rotate with respect to the second horizontal boom about the rotation axis.

In accordance with another preferred embodiment of the present invention there is provided a method that includes obtaining a rotating unit that includes an imaging camera, defines a rotation axis and is rotatable between a home position and a finish position, positioning an alignment camera that is directed generally downwardly generally co-axially with the rotation axis, positioning a subject below the alignment camera such that the subject can view a first alignment image captured by the alignment camera on a first monitor, aligning the subject, and rotating the rotating unit from the home position to the finish position and taking a first scan with the imaging camera at a first time to capture a first video image. In a preferred embodiment, the rotating unit includes a screen that rotates opposite the imaging camera.

In a preferred embodiment, in the home position the screen is positioned between the imaging camera and the first monitor and a first opening is defined in the screen. The first opening is aligned with the first monitor when the rotating unit is in the home position. Preferably, the imaging system includes a second monitor on which the first alignment image can be viewed, and the second monitor is positioned above the first monitor. The screen includes a second opening defined therein, and the second opening is aligned with the second monitor when the rotating unit is in the home position. In a preferred embodiment, the method further includes positioning the subject below the alignment camera such that the subject can view the first alignment image on the second monitor, aligning the subject, and rotating the rotating unit from the home position to the finish position and taking a second scan with the imaging camera.

In a preferred embodiment, the imaging system includes a third monitor on which the first alignment image can be viewed, and the third monitor is positioned above the first monitor. The screen includes a third opening defined therein, and the third opening is aligned with the third monitor when the rotating unit is in the home position. In a preferred embodiment, the method further includes positioning the subject below the alignment camera such that the subject can view the first alignment image on the third monitor, aligning the subject, and rotating the rotating unit from the home position to the finish position and taking a third scan with the imaging camera.

In a preferred embodiment, the method further includes positioning the subject below the alignment camera such that the subject can view a second alignment image captured by the alignment camera on the first monitor, aligning the subject, and rotating the rotating unit from the home position to the finish position and taking a second scan at a second time with the imaging camera to provide a second video image. Preferably, the method includes merging the first video image and the second video image to provide a merged video image that shows at least a portion of the first scan adjacent at least a portion of the second scan.

In accordance with another preferred embodiment of the present invention there is provided an imaging system that includes a rotating unit that includes a first horizontal beam that rotates about a rotation axis. The first horizontal beam has first and second opposite ends and includes an imaging camera depending downwardly from the first end and a screen depending downwardly from the second end such that it rotates opposite of the imaging camera. The imaging camera is rotatable about the rotation axis between a home position and a finish position. The imaging system also includes an alignment camera positioned below the first horizontal beam and directed generally downwardly. The alignment camera is generally co-axial with the rotation axis and is configured to capture a first alignment image of a subject positioned generally co-axially with the rotation axis/The imaging system also includes at least a first monitor on which the first alignment image is displayed. In the home position the screen is positioned between the imaging camera and the first monitor. A first opening is defined in the screen and the first opening is aligned with the first monitor when the rotating unit is in the home position. In a preferred embodiment, the imaging system further includes a second horizontal beam that includes